

## Dr. Deidre J. Meiggs

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### Employment

2011 – Present Associate Professor, Life University

### Education

- Ph.D. Biogeochemistry with minor in Inorganic Chemistry, School of Earth and Atmospheric Sciences, Georgia Institute of Technology, Atlanta GA (Fall 2010)  
Thesis Title: Development of Autonomous In Situ Techniques to Examine the Impacts of Dynamic Forcings on Sediment Biogeochemistry in Highly Productive Estuarine Ecosystems
- M.S. Chemistry (undesignated), School of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta GA (Spring 2010)
- B.S. Chemistry with Physics minor, Department of Chemistry, University of Florida, Gainesville FL (Spring 2004)
- B.S. Environmental Science with Math Concentration, Institute of Food and Agricultural Science, University of Florida, Gainesville FL (Spring 2004)
- A.A. Engineering, St. Petersburg College, St. Petersburg FL (Spring 2001)

### Teaching Interests

The goal of my career is to provide future generations of undergraduate students with a working knowledge of the fundamental scientific principles and quantitative tools required to obtain competitive employment positions within the fields of chemistry and environmental sciences. The outstanding academic community at Georgia Tech provided me with a wealth of research and teaching experience. My position at Life U has enabled me to utilize and continually develop my skills through teaching, advising, and mentoring opportunities at the undergraduate level. I have extensive backgrounds in both the environmental sciences and chemistry including biogeochemical processes, chemical and physical oceanography, meteorology, atmospheric chemistry, geochemistry, and geology as well as inorganic, analytical, and radiochemistry. My teaching experience encompasses the instruction of undergraduate science majors as well as non-majors through classroom lectures, laboratory instruction, and personal tutoring. Additionally, I specialize in creative curriculum development for contemporary classroom settings including interdepartmental collaboration when possible to enhance the learning experience. While not as extensive, I also possess a measure of experience with online instruction. To engage students and cater to their varied learning styles, I employ an assortment of active learning teaching techniques including team based learning, discussions, case studies, presentations, and group activities. Most importantly, I strive to present material in real world context to ensure non-science majors understand the opportunities science offers them.

## Teaching Experience

Lead Instructor, Life University

\*These courses were developed by me from scratch (ENV) or rebuilt from the course description up (CHM)

- Accelerated General Chemistry (CHM 111 & CHM 112), Winter 2011 – present
  - This course serves as an introduction to the fundamental laws and theories of chemistry. It is designed for students that are pursuing a science based career that have a college algebra background. I teach this course and its laboratory co-requisite on a quarterly basis. The class size ranges from an independent study session of 2 up to 50 students per classroom with a number of ESL students as well as second degree or second career students.
- General Chemistry for Pre-Professionals (CHM 113), Summer 2011 – present
  - This course rounds out the general inorganic chemistry curriculum through a glimpse into various specialty areas of chemistry including the chemistry of the atmosphere, advanced thermodynamics, electrochemistry, metallurgy, transition metal chemistry, and nuclear chemistry. I have also added a number of fun special topics just to keep things interesting, and some MCAT prep material.
- Introductory Meteorology (ENV 101), Fall 2011 - present
  - This introductory course examines meteorology from a basic and practical perspective. I designed it to provide students with a basic understanding of weather patterns as well as the dynamics of storm system formation so that they will be able to understand the scientific basis behind daily weather forecasting. I designed this course to be an introductory practical science course for non-science majors.
- Introduction to Oceanography (ENV 103), Spring 2014 - present
  - This introductory course focuses on the oceanic component of the Earth system with particular emphasis on the role of the ocean in the Earth's geological, biological, chemical, physical and climatic cycles. This course includes a discussion of a number of interdisciplinary topics that are pertinent to current environmental awareness including El Nino, Global Warming, The Carbon Cycle, the physical and chemical properties of sea water and sea ice, and tidal fluctuations. I designed this course to be an introductory practical science course for non-science majors.
- Environmental Science and Sustainability (ENV 300), Summer 2014 – present
  - This interactive, discussion based course is designed to give students a fundamental understanding of a rotating selection of environmental, economic, and social problems facing humans at local, regional, and global levels. Students will be introduced to and debate varying perspectives from the natural and social sciences, arts and humanities, and professional disciplines, investigating how their interconnection relates to sustainability.
- Secular Ethics and the Environment (ENV 302/PSY 302), Fall 2015 – present
  - In this collaborative course, we will study the moral relationship between human beings and the environment and consider the ethical ramifications of our actions on the environment. This case study based course provides an introduction to “secular” or “universal” ethics (ethics based on common experience, common sense, and scientific findings), and applies them to current environmental issues with a focus on understanding relevant ethical principles and values in order to rationalize our daily life choices with respect to good environmental stewardship.
- Geosystems (ENV 201), developed but not yet officially offered
  - This course will focus on the aspects of geology most relevant to human awareness and will be designed to introduce students to common topological structures and surface features of the earth's surface. It will also introduce the materials and the processes from which these features are formed as well as touch upon common geologic hazards. Pertinent (and practical) laboratory experiments and demonstrations will be included e.g.

identification of common minerals and rocks and methodology for the construction of geologic maps.

#### Substitute Lecturer, Georgia Institute of Technology

- Chemical Principles I, Fall 2010, Dr. Joseph Perry (Instructor)
  - I participated in a teaching practicum with Dr. Perry as my mentor to gain experience in large class size instruction. I taught the class on multiple occasions during his absence, and also when he was present to critique my teaching.
- General Chemistry Honors, Fall 2010, Dr. C. David Sherrill (Instructor)
  - This course was designed to fulfill the chemistry curriculum requirement for non-chemistry focused majors. I attended the lectures to compare the old (this) and new (Chemical Principles) chemistry curricula as part of my teaching practicum, and I delivered substitute lectures during the head instructor's absence.

#### Teaching Assistant, Georgia Institute of Technology

- Geochemistry, Fall 2008 & Fall 2009, Dr. E.M. Perdue (Instructor)
  - This course was designed for Earth Science students seeking a geochemistry or geophysics specialization, and included a rigorous laboratory component. I taught the laboratory for 2 semesters, developed laboratory experiments, and graded lab assignments, homework, and exams. I developed and delivered course lectures during an extended absence taken by the head instructor for research purposes.
- Earth Processes Laboratory, Spring 2009, Dr. Kurt Frankel (Instructor)
  - I was responsible for 2 laboratory sections with 20+ students each that met on a weekly basis for 3 hour sessions. Enrollment was 90% engineering, building construction, or management majors. My primary duties included teaching laboratory material and grading reports; however, I also assisted with exam grading for the lecture section, and was responsible for completely reformatting the grading rubric.

#### Instructor, Gwinnett County Schools, JASON Project

- Practical Meteorology, Summer 2005, 25 local middle school instructors
  - This 5 week long online course used the eCollege platform to prepare instructors for upcoming curriculum changes in the State of Georgia public school system. My responsibilities included directing online discussion forums, posing questions to the teachers and responding to their queries on content and pedagogy, assisting with the development of classroom activities for 6<sup>th</sup> grade Earth Science, developing quizzes, and assigning grades to the teachers.

#### Tutor

##### Life University Student Success Center

- General Chemistry Sequence (CHM 111/112), continued intermittently
  - Customarily, previous students of mine are employed as student tutors for my class; however, I have had to serve as the tutor during multiple quarters when a suitable student tutor could not be assigned.
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##### Georgia Institute of Technology Athletics Association

- Intro to Environmental Science, Fall & Spring 2006
  - I tutored students from non-science majors in this course for 2 semesters. I was assigned one advanced student each semester. Meetings were designed to address student questions, but I also assisted them with exam reviews and homework.
- Habitable Planet, Fall 2005 & Spring 2006

- I primarily tutored students from non-science majors in this course for 2 semesters. I was assigned a group of 4 – 5 students each semester and prepared lectures for 2- 3 hour biweekly discussion sessions that reinforced the material presented during class lectures. I also assisted students with homework assignments and organized review sessions in preparation for the exams.

Lab Assistant, Organic Chemistry Teaching Lab, University of Florida

- Employed (20+ hours weekly) Spring 2002 through Summer 2004
  - My primary responsibilities included the preparation of reagents and unknown samples for the undergraduate student labs. I also graded the quantitative portions of lab report submissions, learned how to organize and manage a large undergraduate teaching lab (chemical ordering, safety protocols, stock rotation, student billing procedure etc.) and trained all new hire lab assistants

### Awards

- LU Advisor of the Year (2015)
- LU Thank a Teacher Program (2014)
- LU Research Award (2013)
- Tech to Teaching Certification Program (Spring 2011)
- Center for the Enhancement of Teaching and Learning/BP America Teaching Assistant Award Finalist (Spring 2010)
- Teaching Assistant Award, School of Earth and Atmospheric Sciences (Spring 2010)
- Best Oral Presentation 5<sup>th</sup> Annual EAS Graduate Student Symposium (Fall 2007)
- Outstanding Student Volunteer Bay Pines Medical Center (Summer 1999)
- Florida Bright Futures Scholarship Recipient (Spring 1999)
- Honorable Mention Student Volunteer Bay Pines Medical Center (Summer 1997)

### Professional Associations, Committees, Clubs, & Educational Development:

GT Alumni Association (2011 – present)  
 UF Alumni Association (2011 – present)  
 National Association of Geoscience Teachers (NAGT) (2010 – present)  
 American Geophysical Union (AGU) (2007 – present)  
 American Chemical Society (ACS) (2006 – 2007)

LU Continuous Improvement Cycle Coordinator (2015 – present)  
 LU Biology Faculty Search Committee (2015 – present)  
 LU Faculty Senate (2014 – present)  
 LU Rank and Promotion Committee (2014 – present)  
 LU Faculty Merit Awards Committee (2014 – present)  
 LU Restructuring & Expansion of the Biology Degree Committee Chair (2013 – present)  
 LU Nutrition Department Faculty Search Committee (2013)  
 LU Biology Exit Exam Ad Hoc Committee (2013)  
 LU Strategic Prioritization Project (2013)  
 LU Business Department Faculty Search Committee (2011)  
 GT College of Earth and Atmospheric Science Faculty Search Committee (2007–2010)

LU Natural Science & Sustainability Club Advisor (2014 – present)

LU New Student Orientation Facilitator (2014 – present)

LU Salsa Club Advisor (2012 – 2013)

GT Mentor Jackets Program (2014 – present)

GT Scholarship of Teaching and Learning (SoTL) Journal Club (2010 – 2011)

SPC Phi Theta Kappa Honors Society (1999 – 2001)

Bay Pines Veterans Hospital Student Volunteer 1000+ hours of service (1994 – 2000)

### Laboratory Research Experience:

#### Graduate Research Assistant

- Georgia Institute of Technology (Fall 2004 through Fall 2010)  
Thesis Advisor: Dr. Martial Taillefert
  - Geochemistry of freshwater and marine environments
  - In situ measurements in estuarine sediments
  - Analytical speciation of trace metals
  - Interactions between chemical and biological processes at redox interfaces
- Dr. David J. DesMarais, NASA Ames Research Center (Summer 2005 & Summer 2008)
  - Biogeochemistry of microbial mats in hypersaline environments
- Dr. George W. Luther III, University of Delaware (Fall 2005)
  - Trace element speciation in marine waters and sediments
  - Biogeochemical processes in marine environments
  - In situ electrochemistry and microelectrode technology

#### Undergraduate Research Assistant

- Dr. Alan Long, University of Florida (Spring and Summer 2004)
  - Fire hazard assessment in the wildland-urban interface

### Environmental Sampling and Analytical Expertise:

- Six years of field measurements including 20 research cruises for water and sediment collection and analysis. The purpose of these cruises was to deploy an autonomous benthic lander for *in situ* measurements of the water column and sediments using electrochemical techniques.
- *In situ* electrochemical profiling of microbial mats using Hg/Au microelectrodes and pH microelectrodes
- Analytical Electrochemistry (potentiometry & voltammetry)
- Spectrophotometry, flow injection analysis and High Performance Liquid Chromatography
- Inductively Coupled Plasma Mass Spectrometry for trace metal analysis in water samples
- Oxygen combustion calorimetry

### Publications:

- **Meiggs, D.**, Bristow, G., Schur, J., Nuzzio, D., and Taillefert, M. (submitted to *Limnology and Oceanography: Methods*, Dec 2009; under revision) Development of a benthic lander equipped with an in situ electrochemical analyzer (ISEA) for the simultaneous measurement of benthic fluxes and depth profiling in continental shelf sediments.

- **Meiggs, D.**, Jones, M., Nuzzio, D., Luther III, G. W., and Taillefert, M. (to be submitted to *Aquatic Geochemistry*, December 2011) The use of remote sensing to characterize the physical and biogeochemical processes controlling carbon respiration in salt marsh sediments.
- **Meiggs, D.** and Taillefert, M. (2011) Impact of riverine discharge on biogeochemical processes in estuarine sediments. *Limnology and Oceanography*, 56(5), 1797 – 1810.

#### Invited Presentations & Posters at Local and National Meetings:

- GT Career, Research, and Innovation Development Conference (2015) Invited Panelist
- GT Graduate Career Symposium (2014) Invited panelist
- **Meiggs, D.** (2013) Teaching Accelerated Science: Possible and Effective with Team Based Learning. Teaching Professor Conference, New Orleans, LA
- LU Active Learning Colloquium (2013) Invited presenter
- **Meiggs, D.**, Nuzzio, D., Luther III, G. W., and Taillefert, M. (2010) Development of Autonomous Sensing Techniques for In Situ Benthic Flux, Depth Profile, and Time Series Measurements of the Main Redox Species Involved in Sediment Biogeochemistry. ASLO Ocean Science Meeting, Portland, OR.
- Taillefert, M., **Meiggs, D.**, and Nuzzio, D. (2009) A New Autonomous Benthic Lander for In Situ Microprofiling and Benthic Flux Measurements of O<sub>2</sub>, Mn(II), Fe(II), and H<sub>2</sub>S in Continental Shelf Sediments. Chemical Oceanography in a Changing World Conference, Savannah, GA.
- **Meiggs, D.** and Taillefert, M. (2008) The Impact of Drought on the Cycling of Carbon in Coastal Marine Sediments of the Southeast United States. EAS Graduate Student Symposium, Atlanta, GA.
- **Meiggs, D.**, Nuzzio, D., and Taillefert, M. (2008) Evaluating the Impact of Drought Conditions on Biogeochemical Processes in Coastal Marine Sediments. The Kindsvater Symposium, Atlanta, GA.
- **Meiggs, D.**, Bristow, G., Nuzzio, D., and Taillefert, M. (2008) *In situ* profiles and benthic flux measurements to determine seasonal variations in the biogeochemical processes of the estuarine and continental shelf sediments of the Satilla River (Georgia, U.S.A.). ASLO Ocean Science Meeting, Orlando, FL.
- Taillefert, M., **Meiggs, D.**, Nuzzio, D., Luther III, G.W. (2008) The effect of tidal forcing on biogeochemical processes in salt marsh sediments. ASLO Ocean Science Meeting, Orlando, FL.
- **Meiggs, D.** and Taillefert, M. (2007) Examining the Effects of Seasonal and Salinity Variations on Satilla River Sediments (Georgia, U.S.A.) Using In Situ Voltammetric Depth Profile Measurements. EAS Graduate Student Symposium, Atlanta, GA.
- Taillefert, M., **Meiggs, D.**, Bristow, G., Beckler, J., Jones, M., Salome, K., Wilson, P., Wu, H (2007) Role of Iron in the Remineralization of Carbon in Coastal Marine Sediments. Estuarine Research Federation. Science and Management: Observations, Syntheses, Solutions, Providence, RI.
- **Meiggs, D.**, Bristow, G., Schur, J., Nuzzio, D., and Taillefert, M. (2007) Development of a benthic lander equipped with an ISEA (*in situ* electrochemical analyzer) to evaluate the impact of iron reduction on carbon oxidation in continental margin sediments. Gordon Research Conference in Chemical Oceanography, Tilton, NH.
- Taillefert, M., **Meiggs, D.**, Bristow, G., Nuzzio, D., Luther III, G.W. (2007) Long-Term In Situ Voltammetric Measurements Reveal that Tidal Forcing Promotes Iron Reduction in Intertidal Salt Marsh Sediments. Gordon Research Conference in Chemical Oceanography, Tilton, NH.

- Chow, S., **Meiggs, D.**, Luther III, G.W., Nuzzio, D., Taillefert, M. (2006) Trace Metal Fluctuations Influenced by Tidal Mixing in the Suboxic and Anoxic Transition Zones at Station 858 in the Chesapeake Bay. ASLO Ocean Sciences Meeting, Honolulu, HI.
- Taillefert, M., Bristow, G., Schur, J., **Meiggs, D.**, Beckler, J. (2006) Quantifying Organic Carbon Remineralization Rates in Coastal Marine Sediments Using an In Situ Approach. ASLO Ocean Sciences Meeting, Honolulu, HI.
- Taillefert, M., Bristow, G., Schur, J., Chow, S., **Meiggs, D.** (2005) In Situ voltammetric measurements in coastal marine sediments. 230<sup>th</sup> American Chemical Society Conference, Washington, DC.

### In-service Presentations & Posters

- **Meiggs, D.** (2013) Enhancing Student Learning Through Pre-Lecture Videos. CETL Breakout Sessions, Faculty Development
- **Meiggs, D.** (2013) Teaching Accelerated Science: Possible and Effective with Team Based Learning. Active Learning Colloquium, Faculty Development

### Professional References

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